

IN THE CLAIMS

Please amend the claims to read as follows:

Listing of Claims

1. (Currently Amended) A radio receiving apparatus comprising:

a first ~~calculation section for calculating~~ calculator that calculates reception weighting factors W_k ~~for with respect to~~ received signals received respectively by the ~~respective~~ a plurality of n antenna element elements composing an adaptive array antenna;

an arrival direction ~~estimation section for estimating~~ estimator that calculates steering vectors S_k to estimate directions of arrival of ~~said the~~ received signals;

a second ~~calculation section for calculating~~ calculator that calculates weighting factors W_{rk} ~~for a use in~~ replica signal generation ~~in accordance with said from the~~ reception weighting factors W_k and ~~said directions of arrival the~~ steering vectors S_k ;

a replica signal generator ~~for generating replica signals of each of said received signals using said weighting factors for a replica signal generation that generates replica signals for the received signals using the weighting factors W_k ; and~~

~~an eliminator for eliminating said that eliminates~~
~~components equivalent to the replica signals from said the~~
~~received signals, wherein~~

~~the second calculator calculates the weighting factors W_{rk}~~

~~from the equation:~~
$$W_{rk} = \frac{S_k}{\sum_{k=1}^n S_k W_k} .$$

2. (Currently Amended) The radio receiving apparatus according to claim 1, wherein said first ~~calculation section~~ calculator calculates the reception weighting factors W_{rk} by which a radiation pattern is formed, in such a way that a null point is directed to a direction where an interference signal source exists.

3. (Currently Amended) The radio receiving apparatus according to claim 1, further comprising:

a plurality of processors ~~each having said first calculation section, said arrival direction estimation section, and said eliminator, as a multistage that each comprise a first~~

calculator, an arrival direction estimator and an eliminator, as defined in claim 1, wherein

each processor is one stage of a multistage device.

4. (Currently Amended) The radio receiving apparatus according to claim 3, wherein in the processor of a latter stage, ~~said the corresponding first calculation section~~ calculator calculates the reception weighting factors ~~with respect to the~~ for signals obtained by eliminating equivalent components to the replica signals ~~from the received signals by said eliminator~~ generated in a preceding stage from signals received by the preceding stage, ~~whereby updating the reception weighting factors~~ sequentially.

5. (Currently Amended) The radio receiving apparatus according to claim 3, wherein in the processor of a latter stage, ~~said the corresponding arrival direction estimation section~~ estimator estimates the directions of arrival of the signals obtained by eliminating equivalent components to the replica signals ~~from the received signals by said eliminator~~ generated in a preceding stage from signals received by the preceding stage.

6. (Currently Amended) The radio receiving apparatus according to claim 5, wherein in the processor of a latter stage, ~~said the corresponding~~ arrival direction estimation section ~~estimator~~ estimates the directions of arrival of signals using an average value of calculated steering vectors in a given interval.

7. (Currently Amended) A mobile station apparatus having ~~a comprising the~~ radio receiving apparatus of claim 1 thereon, ~~said radio receiving apparatus comprising:~~

~~—— a first calculation section for calculating reception weighting factors with respect to received signals received by the respective antenna element composing an adaptive array antenna;~~

~~—— an arrival direction estimation section for estimating directions of arrival of said received signals;~~

~~—— a second calculation section for calculating weighting factors for a replica signal generation in accordance with said reception weighting factors and said directions of arrival;~~

~~—— a replica signal generator for generating replica signals of each of said received signals using said weighting factors for a replica signal generation; and~~

~~—— an eliminator for eliminating said replica signals from said received signals.~~

8. (Currently Amended) A base station apparatus having ~~a comprising the radio receiving apparatus of claim 1 thereon, said radio receiving apparatus comprising:~~

~~— a first calculation section for calculating reception weighting factors with respect to received signals received by the respective antenna element composing an adaptive array antenna;~~

~~— an arrival direction estimation section for estimating directions of arrival of said received signals;~~

~~— a second calculation section for calculating weighting factors for a replica signal generation in accordance with said reception weighting factors and said directions of arrival;~~

~~— a replica signal generator for generating replica signals of each of said received signals using said weighting factors for a replica signal generation; and an eliminator for eliminating said replica signals from said received signals.~~

9. (Cancelled).

10. (New) A radio receiving method comprising:

calculating reception weighting factors W_k for signals received respectively by a plurality of n antenna elements composing an adaptive array antenna;

calculating steering vectors S_k to estimate directions of arrival of the received signals;

calculating weighting factors W_{rk} for use in replica signal generation from the reception weighting factors W_k and the steering vectors S_k ;

generating replica signals for the received signals using the weighting factors W_k ; and

eliminating equivalent components to the replica signals from the received signals, wherein

the weighting factors W_{rk} are calculated from the equation:

$$W_{rk} = \frac{S_k}{\sum_{k=1}^n S_k W_k} .$$